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10/783,316

02/20/2004

Nagarajan Rajagopalan

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EXAMINER

CHEN, KEATH T

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/783,316	<b>Applicant(s)</b> RAJAGOPALAN ET AL.	
	<b>Examiner</b> KEATH T. CHEN	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02/20/2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

The claim amendment filed on 01/14/2008, addressing rejection of claims 10-19 from the first office action (08/08/2007), by amending claims 10, 12, 15, and 17 and canceling claims 1-9, is acknowledged and will be addressed below. However, the amendment to specification, see page 2, and amendment to drawing invoke new matter, see below.

### ***Election/Restrictions***

1. Applicant's confirmation of election without traverse of group II drawn to apparatus by canceling claims 1-9, in the reply filed on 01/14/2008, see page 7, is acknowledged.

### ***Drawings***

2. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because hand-drawn. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 13 and 18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. "A third mass flow controller" is not supported by the specification.

#### ***Specification***

4. The amendment filed on 01/14/2008 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: sixth inlet 700 ([0045]); "can be configured to receive ... block final valve 66" ([0048]); and items 700, 702, 704, 708 in Fig. 7.

Applicant is required to cancel the new matter in the reply to this Office Action.

#### ***Drawings***

5. The drawings were received on 01/14/2008. These drawings are not approved because they contain new matter as discussed above.

#### ***Claim Objections***

6. Claims 14 and 19 are objected to because of the following informalities: "injection valve". Two valves connected together in Fig. 7 is described as injection valve, contrary to the usual meaning of injection valve (see US 6511923, col. 13, lines

33-38 or US 6261374, Fig. 1, #11, col. 3, lines 13-33). Appropriate correction is required.

Claims 14 and 19 will be examined with the broadest interpretation, both the definition as in the arts and the definition by the Fig. 7 of the instant application.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 10-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Mukai et al. (US 20030017267, hereafter '267). (Metzner et al. US 20010035127, hereafter '127, is cited to show liquid flow meter and a vaporizer as a liquid mass flow controller).

'267 teaches all limitations of claim 10:

A gas supply panel (Fig. 2) comprising: a first mass flow controller (#232 liquid flow meter, and vaporizer #202, [0030], lines 10-17, together, make up a liquid mass flow controller, as cited in '127, [0106], lines 1-4) configured to be in fluid communication with a processing gas source (#222, TEB) through a first inlet (inlet of #232); a delivery line (#291) configured to be in fluid communication with the first mass flow controller and with a processing chamber (#12 or other chamber as labeled "To chamber") through a first outlet (#252); a second mass flow controller (LFM #234 and vaporizer #204) configured be in fluid communication with a carrier gas flow (through #284 and #264, TEOS) and a source of silicon-containing precursor (#224, TEOS)

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through a second inlet (inlet of #234); a divert line (#295, [0035], lines 13-15, which applies to similar setups) configured to be in fluid communication with the second mass flow controller and with a chamber exhaust through a second outlet (#254); and a divert valve (#274, [0031]) configured to selectively place a stabilized flow of the silicon-containing precursor vaporized in the carrier gas from (the apparatus is capable of switching until the flow is stabilized) the second mass flow controller in fluid communication with the delivery line (via #294) or with the divert line (via #295, [0032]).

'267 further teaches the limitations of claim 15:

A substrate processing apparatus (#12, CVD chamber, [0026] lines 1-2) comprising: a processing chamber (#102) including an exhaust (#112, [0027], lines 6-7); a gas distribution system (#108, [0027], lines 3-5) configured to receive and deliver gases to a gas distribution face plate (#106) located proximate to a substrate support (#110, [0027], lines 5-6) within the processing chamber.

For substantially the same reason as claim 10 rejection above, claim 15 is rejected.

'267 further teaches the limitation of claims 11 and 16:

The divert valve comprises a three way valve (as shown in Fig. 2).

'267 further teaches the limitation of claims 12 and 17:

A shut off valve in fluid communication with the second mass flow controller and with the first outlet ([0030], last sentence).

'267 further teaches the limitation of claims 13 and 18:

A third inlet (two available, #208a and #208b) in fluid communication with the delivery line (#291) through a third mass flow controller (two available, #209a and #209b, [0033]).

'267 further teaches the limitation of claims 14 and 19:

The silicon-containing precursor comprises a liquid ([0004]), the gas supply panel further comprising: an injection valve (#214, [0030], line 11) configured to be in fluid communication with the second inlet and with the second mass flow controller; and a third inlet (#284) configured to be in fluid communication with a carrier gas source (#208a and #208b) and with the injection valve (#214).

### ***Response to Arguments***

Applicant's arguments filed on 01/14/2008 have been fully considered and will be addressed below:

8. Applicant's failed to submit corrected figures to overcome 37 CFR 1.121(d) objection. The newly submitted drawings contain Figure 7 only.
9. Applicant's amendment of specification [0055] overcome drawing objection to Fig. 2.
10. Applicant's amendment of specification [0045] and [0048], along with the figure 7, raise the issue of new matter, as discussed above.
11. Applicant's amendment of claims 12 and 17 overcome specification objection. Applicant's remark on paragraph 5 is not relevant to overcome this objection.
12. In regarding to claim objection, applicant cites MPEP 2173.01, see from paragraph 6 of page 7 to top four lines of page 8.

In response to applicant's remark, please see MPEP 2173.05(a) III "TERMS USED CONTRARY TO THEIR ORDINARY MEANING MUST BE CLEARLY REDEFINED IN THE WRITTEN DESCRIPTION". Applicant has not clearly set forth a definition of the term "injection valve" in the specification. Therefore, Applicant is not entitled to a definition that does not include the commonly known "injection valves".

13. In regarding to 35 USC 102(b) rejection of claims 10-19 based on Mukai et al. ('267), see page 8 line 5-end, applicant argument is the new limitation overcomes the rejection. This is found not persuasive.

Applicant new limitation "a stabilized flow ..." is a processing step without additional structural limitations. Applicant's additional remark regarding Mukai's teaching, last paragraph of page 8, is not relevant to the capability of Mukai's apparatus to carry out "a stabilized flow ..."

### ***Conclusion***

14. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the



shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEATH T. CHEN whose telephone number is (571)270-1870. The examiner can normally be reached on M-F, 8:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/K. T. C./  
Examiner, Art Unit 1792

/Michael Cleveland/  
Supervisory Patent Examiner, Art Unit 1792